UPS-500v2.pub
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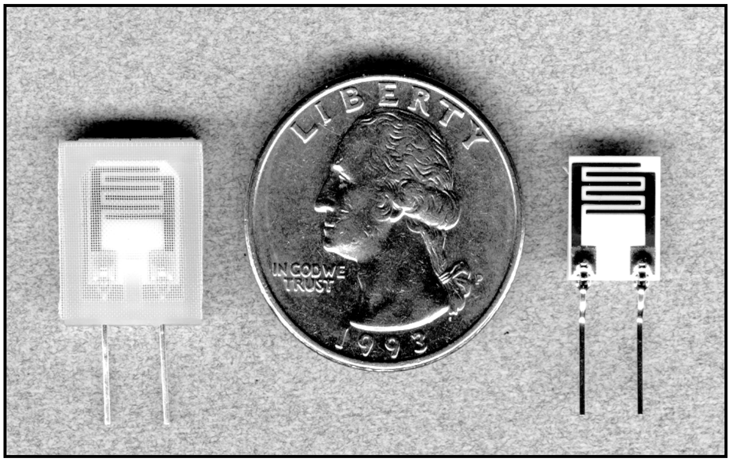
INDUSTRIAL & ENVIRONMENTAL SENSORS, INSTRUMENTS & CONTROLS SINCE 1969

UPS-500 HUMIDITY SENSOR
ECONOMICAL RESISTIVE ELEMENT FOR HIGH VOLUME APPLICATIONS

- **RANGE: 20-90% RH**
- **ACCURACY: ±2%**
- **HIGH SENSITIVITY & FAST RESPONSE**
- **EXCELLENT REPEATABILITY**
- **INTERCHANGEABILITY: WITHIN 2% RH**
- **NEGLIGIBLE HYSTERESIS**
- **NIST TRACEABLE CERTIFICATION AVAILABLE**
- **OFF SHELF DELIVERY**

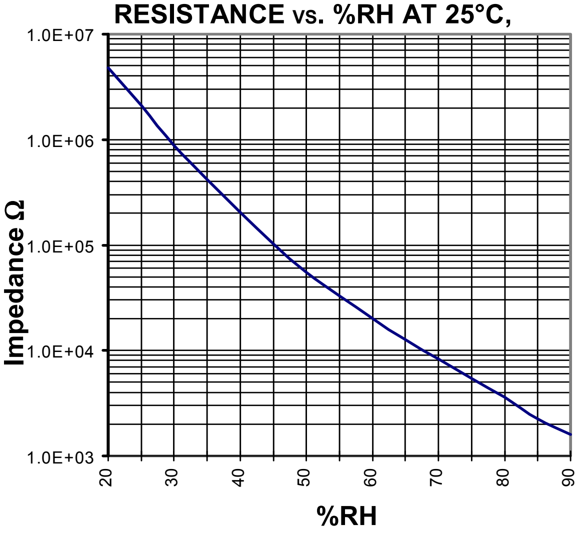


APPLICATIONS

HVAC Controls
Humidistats
Appliances
Compressed Air
Medical Instruments
Data Loggers
Ideal for OEM Applications
Industrial Controls

Photo above (left) shows a UPS-500 sensor enclosed in a protective housing with integral filter and (right) the sensor only. The compact size enables installation in probes and direct soldering to printed circuit boards.

ACCURATE & REPEATABLE HUMIDITY MEASUREMENT AT ECONOMICAL PRICES


RESISTANCE vs. %RH AT 25°C,

UPS-500 Humidity Sensors are designed to provide an accurate and repeatable sensor for high volume applications. Designers can rely on their long term stability and interchangeability. OEM prices are available, with off-shelf delivery. Call for pricing.

To complement the UPS 500 sensor performance, OHMIC Instruments also provides standard and custom designed analog and digital signal conditioning and control circuits at competitive cost. Contact our engineers to discuss your application.

WARRANTY: All products manufactured by OHMIC Co. are warranted to be free of defects in material and workmanship for one year after delivery. Any equipment found to be defective within this period will be repaired or replaced free of charge.

PRINCIPLE OF OPERATION: MODEL UPS-500

UPS-500 series sensors consist of a ceramic substrate with interdigitated noble metal alloy electrodes coated with a hygroscopic conductive polymer. When excited with a low level symmetrical AC voltage, the sensor impedance varies in an inverse logarithmic function proportional to the relative humidity. The exponential curve of Figure 1 is linearized by the signal conditioner.

USING SIGNAL CONDITIONER SC-500:

The optional signal conditioning circuit has a sine wave R-C oscillator operating at 3.8 KHz with 150 mV output. It also includes an amplitude stabilizer, logarithmic amplifier, linearizer and temperature compensation to provide an output voltage directly proportional to relative humidity. Model SC-500 is available in a small surface mounted circuit card and includes a UPS-500 sensor.

All UPS-500 sensors are interchangeable within +2% tolerance; therefore, the signal conditioning circuitry may be calibrated independent of humidity standards by using reference resistors. The SC-500 circuit card is ideal for integration into many OEM applications. Call for OEM prices. Off-shelf delivery.

UPS-500 SENSOR EQUATION:

The general relative humidity equation of the UPS-500 sensor in terms of temperature and impedance is as follows:

$$\%RH = A\{(CZ)^{[(T+459.7)/D(T+459.7)+B]}\}$$

A, B, C & **D** = Constants Related to Specific Ranges
Z = Sensor’s Impedance in MΩ
T = Temperature in °F

Technical data, which includes constants for all ranges, is provided with order.

PRECAUTIONS

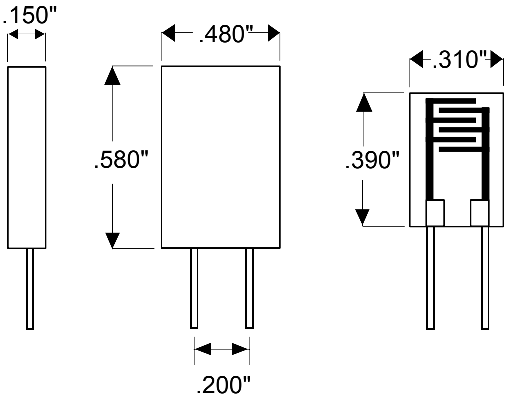
UPS-500 sensors are not recommended for use in environments where condensation or exposure to fluids occurs. **DC current produces sensor polarizations and should not be applied to the sensor at any time. Exposure to these conditions will result in a permanent shift in the sensor’s calibration.** Under normal operating conditions, the UPS-500 sensor will maintain its accuracy specifications for many years.

SPECIFICATIONS - UPS-500

Range	20-90%RH at 77ºF
Accuracy	±2% RH
Interchangeability	within 2% RH
Hysteresis	+/- 1% RH
Long Term Drift	<2%RH/5 Years
Response	5 Seconds/63% Step Change
Temp. Coefficient	-0.4%RH/°F (Average at 20-80%RH From 60-100ºF)
Temperature Limits	-20 to +160°F
Excitation Voltage	1 Vac., symmetrical
Excitation Frequency	33-1 KHZz

DIMENSIONS

DIMENSIONS FOR UPS-500 SENSOR HOUSING



ENGINEERING SUPPORT: OHMIC Instruments Co. designs and manufactures a full line of sensors, environmental and bio-medical instruments and controls. Many of our products are custom designed to meet specific requirements. Our engineers will be pleased to discuss your application.

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